

Study on The Model of Microscopic Contact Parameters for Grinding M300 Using Elastic Abrasive Tool

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Abstract : In precision grinding, utilizing the elastic matrix ball has higher processing efficiency and better superficial quality than traditional grinding. The diversity of characteristics which elastic abrasive tool contact with bend surface results in irregular wear abrasion and abrasive tool machining status get complicated. There is no theoretical interpretation that parameters affect the grinding accuracy. Aiming at corrosion resistance, wear resistance and other characteristics of M 300 material, it is often used as a material on aerospace precision components. The paper carried out grinding and polishing experiments by using material of M 300, to theoretically show the relationship between stress magnitude and grinding efficiency and predict the optimal combination of grinding parameter for effective grinding, just for the high abrasion resistance features of M 300, analyzing the micro-contact of elastic ball abrasive tool (Whetstone), using mathematical methods deduce the functional relationship between residual peak removal rate and the main parameters which impact the grinding accuracy on the plane case. Thus laying the foundation for the study of elastic abrasive prediction and compensation.

Keywords : flexible abrasive tool, polishing parameters, Hertz theory, removal rate

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